

**Before The
Federal Communications Commission
Washington, DC 20554**

In the Matters of)	
)	
Location-Based Routing for)	PS Docket No. 18-64
Wireless 911 Calls)	
)	

**COMMENTS OF
COMTECH TELECOMMUNICATIONS CORP.**

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Comments Of Comtech Telecommunications Corp.

Introduction

Comtech Telecommunications, Inc. (“Comtech”)¹ hereby submits its initial comments in response to the Notice of Inquiry (“NOI” or “Notice”) released by the Federal Communications Commission (“Commission” or “FCC”) in this docket². The Notice seeks comment on, among other topics, “the best way to avoid delay in the response to some wireless 911 calls that results from the way such calls are routed in the current 911 system . . . how the delays that arise from misrouting of wireless 911 calls can be avoided, possibly resulting in faster response times, via the implementation of location-based routing solutions.”³

Comtech approaches this topic with over 20-years of wireless communications public safety history and a unique perspective as the world’s leader in wireless carrier-based location logistics.⁴ On September 5, 1997, Comtech pioneered the first ever Phase I wireless E9-1-1 call in Allentown, PA.⁵ Comtech’s experience has progressed through deployments of some of the first Next Generation 9-1-1 (“NG9-1-1”) systems in Iowa, Texas, South Dakota, and Tennessee, and continues with an ESInet deployment for Washington state.⁶

Comtech now delivers calling device location for over half of all wireless 9-1-1 calls in the United States, and provides call routing for these calls to the Public Safety Answering Point (“PSAP”) that has been pre-identified by local public safety jurisdictions, based upon the cell site

¹ 1 On February 23, 2016 Comtech Telecommunications Corp. (symbol CMTL) purchased 100% of the stock of TeleCommunication Systems, Inc. (TCS) (symbol TSYs). When referencing Comtech, we also include the historic filings and positions of TCS.

² *Location-Based Routing For Wireless 911 Calls* (PS Docket No. 18-64) (FCC-CIRC1803-03) (Released March 1, 2018) (“NOI” or “Notice”).

³ *Id.* at pp. 1,3.

⁴ *TCS and Ericsson Top ABI Research’s Carrier Location Platform Competitive Assessment*, (ABI Research) (November 21, 2014). <https://www.abiresearch.com/press/tcs-and-ericsson-top-abi-researchs-carrier-location/>

⁵ The company’s name in 1997 was “Xypoint”, later to become part of TCS (<https://www.allentownpa.gov/Police/911-Communications-Center/History-of-9-1-1/>) (<http://www.marketwired.com/press-release/tcs-donates-artifact-to-the-apco-international-heritage-foundation-662569.htm>)

⁶ *Comtech Telecommunications Corp. is Awarded Contract Valued At Approximately \$45.0 Million to Provide Statewide ESInet* (Press Release – July 20, 2016) <http://www.comtechtel.com/releasedetail.cfm?ReleaseID=980381>

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location and cell antenna sector of the 9-1-1 access infrastructure that supports the origination of the 9-1-1 call (Phase I and Phase II⁷). Industry estimates are that annually over 200 million⁸ wireless emergency 9-1-1 calls are delivered to PSAPs. Based upon its pioneering location technology expertise and its operational experience in managing hundreds of millions of wireless 9-1-1 calls over the past two decades, Comtech provides comments that it hopes will be useful to the Commission.

A. Phase I Emergency 9-1-1 Call Routing Works As Designed

The NOI must distinguish and weigh the cost / benefit of two separate but interdependent topics; does a 9-1-1 location methodology deliver the calling device location to the PSAP accurately, and is that location delivered quickly enough to justify use as the basis for routing a wireless 9-1-1 call? Phase I data is available almost immediately after the 9-1-1 call is initiated, and is consistently available for almost every 9-1-1 call, but must be pre-provisioned into the standardized 9-1-1 system ahead of the emergency call. Therefore, when a 9-1-1 call is placed, the process of routing the call is very fast and efficient because, in part, Phase I routing does not also deliver the precise location of the caller.

Call routing and caller location are currently separate processes and managed independently. Comtech originally included the opportunity to use location-based 9-1-1 wireless call routing (“9LBR”) into its wireless E9-1-1 call routing algorithms, but due to valid concerns

⁷ Wireless E9-1-1 Phase I is the delivery of a wireless 9-1-1 call with callback number and identification of the cell-tower from which the call originated. Required by FCC Report and Order 96-264 pursuant to Notice of Proposed Rulemaking (NPRM) 94-102. Wireless Phase II is defined as Required by FCC Report and Order 96-264 pursuant to Notice of Proposed Rulemaking (NPRM) 94-102: the delivery of a wireless 9-1-1 call with Phase I requirements plus location of the caller within 125 meters 67% of the time and Selective Routing based upon those coordinates. Subsequent FCC rulings have redefined the accuracy requirements. [NENA Master Glossary, https://c.ymcdn.com/sites/www.nena.org/resource/resmgr/standards/NENA-ADM-000.22-2018_FINAL_2.pdf]

⁸ The National Emergency Number Association (“NENA”) estimates that over 240 million calls are made to 9-1-1 in the U.S. each year, and in many areas, 80% or more are from wireless devices. <https://www.nena.org/?page=911Statistics>

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regarding reliability, trouble-shooting, cyber security, immediacy of caller location determination, impact on PSAPs, time to an acceptable location fix, total call set-up time, the caller's experience (e. g., concern over premature hang-ups), maintenance and administration, and overall system costs, the industry took a more conservative path, instead standardizing on cell tower based routing coupled with separate Phase II device location. Phase I and Phase II became and remains the defacto standard.

B. The Need for 9-1-1 Location Based Routing Is Unquantified

Routing of 9-1-1 calls based on an accurate caller location is a frequently occurring goal of public safety. For example, the California 9-1-1 Workgroup researched the topic and issued a comprehensive White Paper.⁹ The White Paper made six recommendations for improvement, including; exploring available technology, and *gathering more data* to quantify how well Phase I routing worked.¹⁰ California's Office of Emergency Services funded proof of concept testing for 9LBR in 2012.¹¹ 9LBR may help correct the issue of wireless calls routing to sub-optimum

⁹ *Wireless 9-1-1 Routing in California – Issue Paper*, (“White Paper”), <http://www.caloes.ca.gov/PublicSafetyCommunicationsSite/Documents/002-WorkgroupLocationRoutingIssuesPaper021715.pdf>

¹⁰ “Recommendations/Opportunities: The 9-1-1 Workgroup is of the opinion that the current legacy wireless routing system is not broken. Instead it is working as designed, understanding that the current wireless location technology is not able to provide anything better. This does not mean that improved routing; work processes and quality assurance programs cannot be developed. The following are recommendations developed by the 9-1-1 Workgroup: 1. Explore available technology that could enhance the decision making process for cell sector routing and identify sectors that should be reviewed. 2. Data needs to be put into timely, user-friendly reports that can be generated by 9-1-1 personnel from their workplace, thus allowing for routing recommendations based on objective data. These reports should include, at a minimum: a. Transfers to and from the PSAP b. Plotting of Phase 2 calls by cell sector c. Errors in routing – such as towers not listed in Database d. Any routing that is inconsistent with the CHP/County Coordinator instructions e. Automated alerts or warnings based upon pre-defined criteria 3. Rules/ regulations /quality assurance procedures need to be put in place to ensure the cellular carriers report new towers and cell sector modifications in a timely manner and the sectors are tested to ensure correct routing. 4. There needs to be an outreach program to educate PSAPs, other public safety organizations and in some cases the citizenry about legacy system routing. 5. Develop a statewide, standardized guideline for routing changes on existing and new cell sectors. 6. Establish a comprehensive way to track routing changes and keep historical data for reference.” White Paper at pp.7-8.

¹¹ “In January 2012, initial proof of concept testing for X/Y (location based) routing with Verizon Wireless also took place . . .” California Office of Emergency Services web page summarizing CA 9-1-1 technology history. <http://www.caloes.ca.gov/for-individuals-families/ca-9-1-1-emergency-communications-branch/ca-9-1-1-technology>

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PSAPs, and these current “misroutes” potentially resulting in longer response times which could costs lives.¹² The NOI seeks data regarding the number of wireless 9-1-1 calls that require transfer as the magnitude of this burden on PSAPs is uncertain, and a cost/benefit analysis is impossible without reliable information.¹³

Unfortunately, Comtech does not currently track or have visibility into PSAP call transfers, and the few studies that Comtech has reviewed are likely statistically irrelevant for national policy.¹⁴ Even the CSRIC V Task Force 1 Group, assigned the task of determining PSAP transfer best practices, offered no data on the number or frequency of PSAP transfers.¹⁵ Without reliable national information, policy initiatives could be ineffective or a distraction to the larger ongoing national effort to design and deploy NG9-1-1 NENA i3 networks. Also, the CSRIC V PSAP Re-Routes Report offered many useful “best practices” regarding optimization of PSAP reroutes.¹⁶ It would be important to validate the impact of the implementation of those best practices before reroutes were measured in any study or quantitative analysis.

¹² The FCC’s use of the term “misroute” is incorrect. The NENA Master Glossary defines “Misroute” as “A term used to describe when a 9-1-1 call is routed to an incorrect PSAP due to a network or database discrepancy.” https://c.ymcdn.com/sites/www.nena.org/resource/resmgr/standards/NENA-ADM-000.22-2018_FINAL_2.pdf A wireless 9-1-1 call routed to the PSAP assigned by Public Safety as part of that area’s wireless service plan is not a “misroute.”

¹³ NOI at para. 17.

¹⁴ “According to the Commonwealth NG 9-1-1 Feasibility Study and review of cell sector routing reports and data from the pilot statewide 9-1-1 data analytics initiative, it has been estimated that around ten percent of all 9-1-1 calls are transferred from the originating PSAP.” <https://www.vita.virginia.gov/media/vitavirginiagov/integrated-services/pdf/BPRouting2.pdf> .

¹⁵ The Working Group made many useful recommendations, but did not report on our independently quantify the magnitude of the issue of PSAP transfers / re-routes. *CSRIC V Evolving 911 Services Working Group 1, Task 1: Optimizing PSAP Re-Routes* (Final Report March 16, 2016), https://transition.fcc.gov/bureaus/pshs/advisory/csric5/WG1_Task1_Final_Report_0316.docx (“CSRIC V PSAP Re-Routes Report”).

¹⁶ *Id.* at pp. 8-10.

C. CSRIC Provided Invaluable Information About the Potential for 9LBR

As the NOI acknowledges, the 2016 CSRIC V LBR Report provided a thorough review of location based 9-1-1 call routing technologies, their comparative advantages and disadvantages, and implementation issues for each.¹⁷ The Report included recommendations about the five reviewed location-based routing methods¹⁸ and recommendations regarding future inquiries.¹⁹ In summary, these recommendations call for; continued testing and investigation, using objective, industry approved and open standards-based techniques, including involving all affected parties in the investigation, and using a testing structure that produces scientifically verifiable and publicly available results. Comtech believes that these recommendations should be given significant weight in the NOI.

D. NG9-1-1 Networks Already Contemplate 9LBR

NENA i3's vision of routing all 9-1-1 calls across an ESInet infrastructure based on caller location represents a long-standing vision for routing 9-1-1 calls. Any change in the Commission's rules to enable 9LBR within originating networks already compatible in terms of existing NG9-1-1 network standards must also assure that legacy PSAPs aren't overrun with new types of location information, delivered in unfamiliar ways, and without the required verification

¹⁷ CSRIC V *Evolving 911 Services Working Group 1, Task 2: 911 Location-Based Routing*, (Final Report September 2016), https://transition.fcc.gov/bureaus/pshs/advisory/csric5/WG1_Task2_FinalReport_092016.docx ("CSRIC V LBR Report").

¹⁸ NOI at pp. 8-9. (1) The delivery of a 911 call should not be delayed to allow time to acquire a Phase II location fix. (2) An interim or quick fix method should be used where its use is expected to yield sufficient benefit to justify the cost. (3) The Commission should work with device manufacturers and CMRS providers to assess the feasibility of enabling any device used for static and nomadic purposes that uses a registered or provisioned civic address with the ability to validate if it has been moved and alert the network of its status. (4) The Commission should further study the suitability of device-based hybrid location for 911 call routing. Additionally, the Commission should encourage the use of assisted satellite navigation systems by CMRS providers in the 911 location algorithm used for device-based hybrid commercial locations and take steps to ensure that location fixes calculated from proprietary databases, considered for routing 911 calls, are accurate. (5) The Commission should continue to support the independent testing and analysis of new location technologies that promise significantly increased accuracy and speed.

¹⁹ CSRIC V LBR Report at pp. 27-28.

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that the location data is accurate, and the location source trustworthy, such that the location hasn't been compromised or spoofed.

5G implementation²⁰ will potentially impact 9LBR in both positive and potentially negative ways. In the area served by a given 5G cell site, cell sectors will be much smaller, resulting in the positive effect that the occurrence of a non-optimal 9-1-1 call route should be reduced.²¹ 5G is also designed to reduce data transmission latency; therefore, end-to-end call setup signaling is expected to take less time. This result will negatively impact those location solutions that depend on having some expected amount of time, (e.g., a two-second delay) during initial call setup to complete the calculation of handset-based location, with the hope of inserting location into the call routing process before the traditional location data arrives. This may both reduce the benefit of the new location solution, and reduce consistency for LBR routing.

E. Marketing-Only Comparisons to Phase I & II May Ignore New Technologies'

Added Risks

Based on a recent Technology Fair ("Tech Fair") sponsored by the NG9-1-1 Institute, the public safety industry was provided a one-stop event for the latest advancements in wireless location technologies²² that has helped to reignite the long-standing desire for 9LBR. Several vendors revealed the results of their latest testing/marketing programs at the Tech Fair. In summary, device-based hybrid, enhanced location clearinghouse, and similar technologies generally claim to have advanced to the point that they can meaningfully reduce the time for a

²⁰ 5G is the next (fifth) generation of cellular technology which promises to greatly enhance the speed, coverage, and responsiveness of wireless networks. What is 5G? Here are the basics. (C|Net, February 9, 2018) <https://www.cnet.com/how-to/5g-network-technology-here-are-the-basics/>

²¹ 5G-related cell sites are designed to serve much smaller areas than traditional cell sites. *5G could require cell towers on every street corner* (CIO Magazine, September 8, 2016). <https://www.cio.com/article/3117705/cellular-networks/5g-could-require-cell-towers-on-every-street-corner.html>

²² Videos of presentations by 9-1-1 location technology vendors (NG9-1-1 Technology Showcase, February 15, 2018, Rayburn House Office Building, Washington, DC), sponsored by the NG9-1-1 Institute. <http://www.ng911institute.org/tech-showcase-2018>

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wireless device calling 9-1-1 to acquire a location fix while simultaneously increasing location accuracy, thereby helping to unlock the potential for reliable 9LBR.

Comtech agrees that 9LBR is a laudable goal, yet would point out that the strengths of the current system must remain incorporated into any eventual standard for routing emergency wireless calls. Phase I, while not perfect, has worked consistently for decades, is cost effective, secure, manageable, universal, backward compatible, handset technology independent, and compared to even recent claims, is still faster than any other approach to routing 9-1-1 calls.

All current location technologies are subject to spoofed or malicious data attacks unless reasonable safeguards and quality checks are put in place. 9-1-1 calls made using hacked location information, prompting Police responses to innocent persons' addresses, known as "swatting", are reported frequently.²³ While contemporary cyber security tools and techniques are always recommended, a strong argument can be made that Phase I and Phase II location information is less likely to be spoofed or hacked than other location technologies because they are generated within and sent via the more controlled carrier domain, rather than delivered by data paths outside the carriers' networks.

Newer and more accurate ways of determining 9-1-1 caller location are always being advanced by the mobile location industry, and their potential value to 9LBR should be encouraged and studied, but caution must be exercised as to "how" that information is injected into the existing emergency call-flow process.²⁴ Current experimentation with text-to-PSAP delivery of wireless 9-1-1 caller location (whether or not it is also used for 9LBR) and other potential alternative information paths directly to the PSAP may work as proof-of-concept trials (or as in the EU where PSAPs do not have Phase II-like systems), but they contradict the

²³ <https://en.wikipedia.org/wiki/Swatting>

²⁴ New technologies such as those discussed during the NG9-1-1 Institute's Technology Showcase include, Device Based Hybrid, Google's ELS, and LaaSer's enhanced location information and call routing platform. See footnote 22 for more information and a link to these companies' technology presentations.

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“established single delivery path” that conforms to the standards-based design of current Phase I and Phase II wireless caller location information delivery, and as a result, are not NENA i3 compliant as to location information delivery.

Carriers could help with this aspect of reliability by remaining as a common aggregation point to collect various location information, and through comparative algorithms provide a ranking of which location is likely to be valid, and which is less likely to be trusted. This control within the carriers’ hardened data environments also ensures consistency in the delivery of data toward the PSAP, keeping PSAPs informed and in control of what types of location data they may or may not want to see at different times during an emergency call. Carrier control of location data also makes it possible for accessible monitoring and reporting of what data was delivered and when it was delivered with respect to an emergency call.

Also, any location information derived from non-standard processes must be calibrated for its “level of trust” to ascertain whether the location data is believable, that it’s coordinate position is reasonable, that its reported error (uncertainty) is within an acceptable range (or FCC standards) to be useful in locating the caller, and that the location advertised is consistently close to where the caller’s device actually is (e.g., ground truth). In order to provide trustworthy results for 9-1-1, and ultimately save lives, Comtech suggests an approach that requires any newly introduced “precise” position information (especially if it is used for 9LBR) to always be compared to the baseline Phase I location, to make sure that the newly reported position information is contextually reasonable, and reliable and hasn’t been subject to spoofing, misconfiguration, or technology failure. This context and accuracy assessment should be based on standardized methodology, and should continue across testing, validation, implementation, and even periodically after initial deployment.

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F. Parties Are Subject To Regulatory Authority

Comtech is unpersuaded regarding claims of “voluntary” efforts or “supplemental” location information as sufficient legal grounds to insulate a vendor from responsibility and/or regulation.²⁵ No FCC rule or statute has been publicly referenced as providing a public safety location vendor “safe harbor,” nor is “supplemental location data” defined in the NENA Master Glossary or an FCC rule.²⁶ Good Samaritan laws are not applicable. Application disclaimers and “best effort” opt-in / opt-out disclosures provide no value.

Instead, there are multiple regulations that apply immediately when a company or agent interacts with public safety in the performance of an enabling act.²⁷ The Commission has broad authority regarding the provision of 911 services. It is well established that the Commission may exercise its ancillary jurisdiction in situations such as this, where its general jurisdictional grant covers the subject of the regulations and the regulations are reasonably ancillary to the Commission's effective performance of its statutorily mandated responsibilities.²⁸ The Commission's rules also permit forbearance in defined circumstances, and it may be appropriate

²⁵ NextGen is not advocating new regulations; only observing that significant relevant regulations already exist. New entrants into public safety are respectfully advised to tread thoughtfully. Regulation, while it carries significant responsibilities, also provides certain state and federal liability protections. Claiming “unregulated” status could nullify this protection should a third-party claim negative consequences from reliance on and potential damages from a new entrant's location or related services. Unfortunately, there is no “in between.”

²⁶ NENA Master Glossary of 9-1-1 Terminology (Revised 4/13/18).

https://c.ymcdn.com/sites/www.nena.org/resource/resmgr/standards/NENA-ADM-000.22-2018_FINAL_2.pdf

²⁷ Multiple areas of FCC rules cover public safety vendors regardless of paid v. voluntary status. For example: 1) Covered 911 Service Provider, “(4) Covered 911 service provider. (i) Any entity that: (A) Provides 911, E911, or NG911 capabilities such as call routing, automatic location information (ALI), automatic number identification (ANI), or the functional equivalent of those capabilities, directly to a public safety answering point (PSAP) . . .” (emphasis added) (47 CFR 12.4). <https://www.law.cornell.edu/cfr/text/47/12.4>; 2) Section 9.7 of the Commission's Rules provides that an owner or controller of a capability that can be used for 911 or E911 service must make that capability available . . . on rates, terms and conditions that are reasonable (emphasis added) (47 U.S.C. § 9.7.) (<https://www.law.cornell.edu/cfr/text/47/9.7>). In other words; regulated. This provision applies to any entity that owns or controls the capabilities and not just to the carriers typically regulated by the Commission (New and Emerging Technologies 911 Improvements Act of 2008, Pub. L. No. 110-823, 122 Stat. 2620 (2008) at ¶ 28) (<https://www.gpo.gov/fdsys/pkg/PLAW-110publ283/html/PLAW-110publ283.htm>).

²⁸ *Am. Library Ass'n v. FCC*, 406 F.3d 689, 700 (D.C. Cir. 2005).

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to engage these procedural rules for initial experimentation and testing.²⁹ Either way, responsible participating vendors must be accounted for in the “circle of trust” and regulated for quality control, reliability, consistency, and to assure responsibility if errors occur.

G. Costs; If 9LBR is Feasible, Is It Economic, and Who Will Pay?

The Commission rightfully asks, “Any solution to the problem of misrouted 911 calls, no matter how effective, must withstand the test of feasibility relative to cost.”³⁰ CSRIC did not attach costs to its analysis and recommendations.³¹ Cost recovery, and the cost benefit of any proposed changes to the current system should be included in any analysis, and carriers, vendors, public safety, and other involved parties should be permitted maximum flexibility regarding this topic.

H. Issues for 9LBR implementation

The NOI poses dozens of interesting and relevant questions. Comtech’s experiences and expertise has yielded additional questions for consideration:

- 1) How should cyber security requirements for new/different types of location presented to the PSAP, especially if via non-traditional delivery methods, be reviewed.
- 2) What safeguards around privacy of location data collected, transferred, and linked to a user’s mobile phone number during an emergency call can be relied upon, given that such caller information may exist outside the traditional “carrier domain of trust?” (see also F.)

²⁹Section 10 of the Communications Act requires the Commission to forbear from applying to a telecommunications carrier any Communications Act provision or Commission regulation if certain statutory criteria are met. <https://www.fcc.gov/wireline-competition/competition-policy-division/forbearance/general/forbearance>

³⁰ NOI at Para. 38.

³¹ NOI at Para. 39.

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- 3) To what level can new 9LBR technologies demonstrate both backward compatibility and coordination with Phase I routing?
- 4) Should all 9LBR be redundant with Phase I?
- 5) How can existing Phase II data delivery be protected, and not discarded or not requested in light of location data alternatives?
- 6) How do new 9LBR technologies impact non-initialized handsets?
- 7) How does 9LBR impact location roaming, both domestically and internationally?
- 8) What role, if any, do public safety or other handset applications play in 9LBR?
- 9) What parallels can be drawn or lessons learned based on location driven user experiences within commercial mobile applications (e.g., such as Uber)?

I. Recommendations for Next Steps Regarding 9LBR

Comtech is encouraged by the prospect of the Commission moving forward with 9LBR, assuming there is an issue to be resolved, and respecting, of course, the lynchpin consideration the wireless industry has already expressed about unsupervised testing.³² In addition, Comtech suggests that the following be addressed in future 9LBR inquiries or testing:

- 1) Because no comprehensive national dataset exists, studies would need to be undertaken to validate and quantify the proposition that wireless 9-1-1 call transfers are a relevant concern for PSAPs.
- 2) If 1) is valid, prohibit experimentation with any “live” 9-1-1 calls or call data unless the participating carrier, its location vendors, the Commission, other software and/or

³² *Ex Parte Presentation, RM-11780 and PS Docket No. 07-114* (APCO, CTIA, NENA, AT&T, Sprint, T-Mobile, U.S. Cellular, and Verizon), Ex parte discussion with representatives of the Commission’s Public Safety and Homeland Security Bureau, April 2, 2018.
<https://ecfsapi.fcc.gov/file/1040502132475/180404%20APCO%20CTIA%20NENA%20911%20Apps%20Guidance%20Ex%20Parte.pdf>

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handset manufacturers (as relevant), and impacted PSAPs agree. If, when, and how notice to the public is given should also be discussed.

3) Creation of new test data and/or review of any existing “test” information be normalized against a standard set of open public terms, conditions, and testing criteria, and that any testing data that cannot pass muster not be included in any subsequent conclusory report.

4) In addition to measuring PSAP call transfers, that the issue of 9LBR be reviewed considering the impact of the call being delivered to an i3 compliant ESInet.

5) In addition to data regarding how many 9-1-1 calls are transferred, for how many of those calls was the location of the caller’s device essential, rather than convenient, to mandate the transfer?

6) The 9-1-1 caller’s location must be available consistently. Just as the 9-1-1 service must never be thought of as a “best effort” service, so too must all location information that 9-1-1 uses to routes calls be viewed as reliable, protected, and trustworthy information rather than “supplemental”.

7) To ensure results that are “public safety grade,” the emergency wireless call routing process must follow the established 9-1-1 location call path and location delivery to the PSAP; this means the foundational involvement of wireless carriers and integration within the circle of trust for their networks.

8) Backward compatibility with existing call routing and location delivery processes and protocols must be required in cases where any type of newly supplied position information either doesn’t arrive, or where it is clearly “wrong”, (e.g., where it is far enough away from cell tower location anchoring the call, that it is considered unrealistic).

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9) The Commission should follow the same successful path as to open and verifiable testing and data integrity as it has taken with other public safety issues such as the Test Bed and wireless location accuracy.³³

Conclusion

As the Commission recognizes, the path forward to achieve successful 9LBR requires striking a balance between the industry's concerns over disruption to existing processes and that of providing more accurate information more quickly to aid in essential lifesaving services. Indispensable elements along this path include, identifying and measuring the problem, consistent use of technical terms and operational processes, application of appropriate (existing or new) industry standards, specifically addressing the "delay of call" issue, safeguarding the sources and destinations of location data, and promoting consistent and systematic testing of call and location data. Also, new entrants need to understand and accept that public safety operates differently than other business arenas. Public safety isn't a game or a greenfield for the latest consumer product fad, it's a highly regulated industry devoted to the public good. Serious vendors are encouraged, respected, and protected; less dedicated vendors may not be.

While technological advancement brings new ways of solving difficult problems, much of today's well-meaning progress is being promoted in a vendor-specific, proof-of-concept approach that competes with the time-tested and more inclusive public safety coordinated, and standardized approach. While Comtech shares in the desire for innovation, some of the current side effects experienced in the fray to overturn the "status quo" of what is today's emergency location processes include; lack of common goals, the inability to verify results, unanswered

³³ See Test Bed LLC (<http://www.911locationtestbed.org/>)

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questions around whether there is statistical significance, and unknowns as to whether these experiments are replicable.

Wireless 9-1-1 location based routing is not a panacea for all of 9-1-1's ills, and the quest for 9LBR cannot impede the goal of maintaining reliable wireless 9-1-1 calling. It is imperative that for 9-1-1, we achieve consistent, reliable methods and solutions, avoiding at all costs, experiments that potentially jeopardize "live" 9-1-1 calls without carrier and FCC notification.

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